What is claimed is:

1. A method for detecting a high boiling point and/or a low vapor pressure material, comprising:

directing radiation from a radiation source onto a surface potentially comprising a high boiling point and/or vapor pressure material, wherein, during a time interval of no more than about $1/100^{th}$ seconds, the directed radiation has a cumulative energy of at least about 1,200 Joules;

collecting an airborne sample at and/or near the surface; and

detecting whether or not the high boiling point and/or low vapor pressure material is present in the collected sample.

2. The method of claim 1, wherein the cumulative energy is at least about 2,400 Joules.

3. The method of claim 1, wherein the cumulative energy ranges from about 1,200 to about 4,800 Joules.

4. The method of claim 1, wherein the time interval is no more than about $1/1000^{th}$ seconds.

5. The method of claim 1, wherein the radiation source is at least one of a strobe and a laser.

6. The method of claim 1, wherein the high boiling point and/or low vapor pressure material is at least one of an explosive, an explosive related compound, a chemical warfare agent, a drug, a toxic industrial compound, and derivatives thereof.

7. The method of claim 1, wherein the material has a boiling point of at least about 150°C.

8. The method of claim 1, wherein the material has a vapor pressure under ambient temperature and pressure of no more than about 2×10^{-3} mm Hg.

9. The method of claim 1, wherein the material has a vapor pressure under standard temperature and pressure of no more than about 2×10^{-3} Hg.

10. The method of claim 1, further comprising before the directing step:

applying a volatilizing agent to the surface.

11. The method of claim 10, wherein the volatilizing agent is at least one of water, a volatile organic solvent, and mixtures thereof.

12. The method of claim 1, wherein the directing step is repeated at a frequency of at least about 0.5 Hz.

13. The method of claim 1, wherein the radiation source has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the material.

14. The method of claim 10, wherein the radiation source has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the volatilizing agent.

15. The method of claim 1, wherein the collecting step comprises the substep: maintaining a negative pressure in the vicinity of the surface.

16. The method of claim 1, wherein the detecting step comprises the substep of: transporting the collected sample through a heated conduit to a detector.

17. The method of claim 16, wherein the temperature of the heated conduit is at least the condensation temperature of the material.

18. The method of claim 16, wherein the temperature of the heated conduit ranges from about 100 to about 250°C.

19. The method of claim 16, wherein the heated conduit comprises a glass and/or ceramic surface adjacent the transported sample.

20. The method of claim 19, wherein the heated conduit comprises a silanizing agent.

21. The method of claim 16, wherein the heated conduit comprises an at least substantially nonpolar surface adjacent the transported sample.

22. The method of claim 1, wherein, in the collecting step, a housing at least substantially surrounds the radiation source and an inlet into a sample handling system.

23. The method of claim 1, wherein an offset distance between a surface of the radiation source and the surface is no more than about 5 cm.

24. The method of claim 22, wherein an offset distance between a peripheral edge of the housing and the surface is no more than about 2 cm.

25. The method of claim 1, wherein the radiation has a wavelength ranging from about 400 nm to about 2 μm.

26. A system for detecting a high boiling point and/or a low vapor pressure material, comprising:

a radiation source operable to direct radiation onto a surface potentially comprising a high boiling point and/or vapor pressure material, wherein, during a time interval of no more than about $1/100^{th}$ seconds, the directed radiation has a cumulative energy of at least about 1,200 Joules;

a sample handling system operable to collect an airborne sample at and/or near the surface; and

a detector operable to detect whether or not the high boiling point and/or low vapor pressure material is present in the collected sample.

27. The system of claim 26, wherein the cumulative energy is at least about 2,400 Joules.

28. The system of claim 26, wherein the cumulative energy ranges from about 1,200 to about 4,800 Joules.

29. The system of claim 26, wherein the time interval is no more than about $1/1000^{th}$ seconds.

30. The system of claim 26, wherein the radiation source is at least one of a strobe and a laser.

31. The system of claim 26, wherein the high boiling point and/or low vapor pressure material is at least one of an explosive, an explosive related compound, a chemical warfare agent, a drug, a toxic industrial compound, and derivatives thereof.

32. The system of claim 26, wherein the material has a boiling point of at least about 150°C.

33. The system of claim 26, wherein the material has a vapor pressure under ambient temperature and pressure of no more than about 2×10^{-3} mm Hg.

34. The system of claim 26, wherein the material has a vapor pressure under standard temperature and pressure of no more than about 2×10^{-3} Hg.

35. The system of claim 26, further comprising:

an applicator operable to apply a volatilizing agent to the surface before radiation is contacted with the surface.

36. The system of claim 35, wherein the volatilizing agent is at least one of water, a volatile organic solvent, and mixtures thereof.

37. The system of claim 26, wherein radiation emission cycles of the radiation source are repeated at a frequency of at least about 0.5 Hz.

38. The system of claim 26, wherein the radiation source has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the material.

39. The system of claim 35, wherein the radiation source has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the volatilizing agent.

40. The system of claim 26, wherein the sample handling system comprises:

a vacuum pump to maintain a negative pressure in the vicinity of the surface.

41. The system of claim 26, wherein the sample handling system comprises:

a heated conduit to transport the collected sample to the detector.

42. The system of claim 41, wherein the temperature of the heated conduit is at least the condensation temperature of the material.

43. The system of claim 41, wherein the temperature of the heated conduit ranges from about 100 to about 250°C.

44. The system of claim 41, wherein the heated conduit comprises a glass and/or ceramic surface adjacent the transported sample.

45. The system of claim 44, wherein the heated conduit comprises a silanizing agent.

46. The system of claim 41, wherein the heated conduit comprises an at least substantially nonpolar surface adjacent the transported sample.

47. The system of claim 26, further comprising:

a housing at least substantially surrounds the radiation source and an inlet into a sample handling system.

48. The system of claim 47, wherein an offset distance between a surface of the radiation source and the surface is no more than about 5 cm.

49. The system of claim 47, wherein an offset distance between a peripheral edge of the housing and the surface is no more than about 2 cm.

50. The system of claim 26, wherein the radiation has a wavelength ranging from about 400 nm to about 2 μm.

51. A system for detecting a high boiling point and/or a low vapor pressure material, comprising:

radiation emitting means for emitting radiation onto a surface potentially comprising a high boiling point and/or vapor pressure material, wherein, during a time interval of no more than about $1/100^{th}$ seconds, the directed radiation has a cumulative energy of at least about 1,200 Joules;

a sample handling means for collecting an airborne sample at and/or near the surface; and

a detector means for detecting whether or not the high boiling point and/or low vapor pressure material is present in the collected sample.

52. The system of claim 51, wherein the cumulative energy is at least about 2,400 Joules.

53. The system of claim 51, wherein the cumulative energy ranges from about 1,200 to about 4,800 Joules.

54. The system of claim 51, wherein the time interval is no more than about $1/1000^{th}$ seconds.

55. The system of claim 51, wherein the radiation emitting means is at least one of a strobe and a laser.

56. The system of claim 51, wherein the high boiling point and/or low vapor pressure material is at least one of an explosive, an explosive related compound, a chemical warfare agent, a drug, a toxic industrial compound, and derivatives thereof.

57. The system of claim 51, wherein the material has a boiling point of at least about 150°C.

58. The system of claim 51, wherein the material has a vapor pressure under ambient temperature and pressure of no more than about 2×10^{-3} mm Hg .

59. The system of claim 51, wherein the material has a vapor pressure under standard temperature and pressure of no more than about 2×10^{-3} mm Hg.

60. The system of claim 51, further comprising:

applying means for applying a volatilizing agent to the surface before radiation is contacted with the surface.

61. The system of claim 60, wherein the volatilizing agent is at least one of water, a volatile organic solvent, and mixtures thereof.

62. The system of claim 51, wherein radiation emission cycles of the radiation emitting means are repeated at a frequency of at least about 0.5 Hz.

63. The system of claim 51, wherein the radiation emitting means has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the material.

64. The system of claim 60, wherein the radiation emitting means has an outputted energy profile and wherein a peak of the profile is located in a radiation absorption band of the volatilizing agent.

65. The system of claim 51, wherein the sample handling means comprises:

vacuum means for maintaining a negative pressure in the vicinity of the surface.

66. The system of claim 51, wherein the sample handling means comprises:

a heated conduit to transport the collected sample to the detecting means.

67. The system of claim 66, wherein the temperature of the heated conduit is at least the condensation temperature of the material.

68. The system of claim 66, wherein the temperature of the heated conduit ranges from about 100 to about 250°C.

69. The system of claim 66, wherein the heated conduit comprises a glass and/or ceramic surface adjacent the transported sample.

70. The system of claim 66, wherein the heated conduit comprises a silanizing agent.

71. The system of claim 66, wherein the heated conduit comprises an at least substantially nonpolar surface adjacent the transported sample.

72. The system of claim 51, further comprising:

housing means for containing the collected sample and reflecting emitted radiation towards the surface, the housing means at least substantially surrounding the radiation emitting means and an inlet into a sample handling means.

73. The system of claim 51, wherein an offset distance between a surface of the radiation emitting means and the surface is no more than about 5 cm.

74. The system of claim 72, wherein an offset distance between a peripheral edge of the housing means and the surface is no more than about 2 cm.

75. The system of claim 51, wherein the radiation has a wavelength ranging from about 400 nm to about 30 μm.